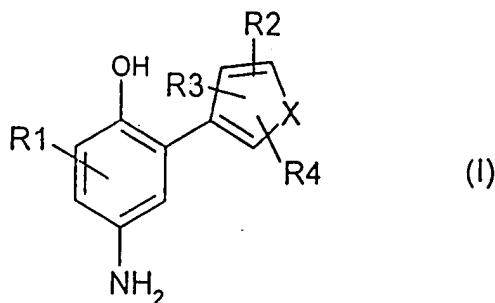


## PATENT CLAIMS

p-Aminophenol derivatives of general formula (I) or physiologically tolerated, water-soluble salts thereof



wherein

X denotes oxygen, sulfur or NR5,

R1 denotes hydrogen, a halogen atom, a C<sub>1</sub>-C<sub>4</sub>-alkyl group, a C<sub>1</sub>-C<sub>4</sub>-hydroxyalkyl group or a C<sub>1</sub>-C<sub>4</sub>-alkoxy group;

R2 and R4 independently of each other denote hydrogen, a hydroxyl group, a halogen atom, a cyano group, a C<sub>1</sub>-C<sub>4</sub>-alkoxy group, a C<sub>1</sub>-C<sub>6</sub>-alkyl group, a C<sub>1</sub>-C<sub>4</sub>-alkyl thioether group, a mercapto group, a nitro group, an amino group, a C<sub>1</sub>-C<sub>6</sub>-alkylamino group, a (C<sub>1</sub>-C<sub>6</sub>)-dialkylamino group, a -C(OH) group, a -C(O)CH<sub>3</sub> group, a -C(O)CF<sub>3</sub> group, an -Si(CH<sub>3</sub>)<sub>3</sub> group, a C<sub>1</sub>-C<sub>4</sub>-hydroxyalkyl group, a C<sub>3</sub>-C<sub>4</sub>-dihydroxyalkyl group, a -CH=CHR6 group, a -(CH<sub>2</sub>)<sub>p</sub>-CO<sub>2</sub>R7 group or a -(CH<sub>2</sub>)<sub>p</sub>-R8 group (with p = 1, 2, 3 or 4), a -C(R9)=NR10 group or a C(R11)H-NR12R13 group;

R3 denotes hydrogen, a halogen atom, a C<sub>1</sub>-C<sub>6</sub>-alkyl group or a -C(O)H group;

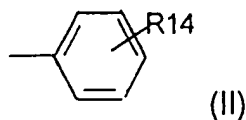
R5 denotes hydrogen, a C<sub>1</sub>-C<sub>6</sub>-alkyl group, a C<sub>1</sub>-C<sub>4</sub>-hydroxyalkyl group, a phenyl group or an acetyl group;

R6 denotes hydrogen, a hydroxyl group, a nitro group, an amino group, a -CO<sub>2</sub>R7 group or a -C(O)CH<sub>3</sub> group;

R7, R9 and R11 independently of each other denote hydrogen or a C<sub>1</sub>-C<sub>4</sub>-alkyl group;

R8 denotes an amino group or a nitrile group;

R10, R12 and R13 independently of each other denote hydrogen, a hydroxyl group, a C<sub>1</sub>-C<sub>4</sub>-alkyl group, a C<sub>1</sub>-C<sub>4</sub>-hydroxyalkyl group, a C<sub>3</sub>-C<sub>4</sub>-dihydroxyalkyl group or a radical of formula (II)



and

R14 denotes hydrogen, an amino group or a hydroxyl group.

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2 ~~2~~ <sup>#1</sup>  
 2. p-Aminophenol derivative according to Claim ~~1~~ <sup>#1</sup>, characterized in that it is selected from the group consisting of 4-amino-2-(3-thienyl)phenol; 4-amino-2-(3-furyl)phenol; 4-amino-2-(pyrrol-3-yl)phenol; 4-amino-2-(1-methyl-1H-pyrrol-3-yl)phenol; 4-amino-3-chloro-2-(3-thienyl)phenol; 4-amino-3-methyl-2-(3-thienyl)phenol; 4-amino-5-chloro-2-(3-thienyl)phenol; 4-amino-5-methyl-2-(3-thienyl)phenol; 4-amino-6-chloro-2-(3-thienyl)phenol; 4-amino-6-methyl-2-(3-thienyl)phenol; 4-amino-2-(2-acetyl-3-thienyl)phenol; 4-amino-2-(2-chloro-3-thienyl)phenol; 4-amino-2-(2-formyl-3-thienyl)phenol; 4-amino-2-(2-methyl-3-thienyl)phenol; 4-amino-2-(4-acetyl-3-thienyl)phenol; 4-amino-2-(4-chloro-3-thienyl)phenol; 4-amino-2-(4-formyl-3-thienyl)phenol; 4-amino-2-(4-methyl-3-thienyl)phenol; 4-amino-2-(5-acetyl-3-thienyl)phenol; 4-amino-2-(5-chloro-3-thienyl)phenol; 4-amino-2-(5-methyl-3-thienyl)phenol and the physiologically tolerated salts thereof.

3 ~~3~~ <sup>#1</sup>  
 3. p-Aminophenol derivative according to Claim ~~1~~ <sup>#1</sup>, characterized in that in formula (I) (i) R1 denotes hydrogen and/or (ii) at least one of groups R2, R3 and R4 denotes hydrogen or a methyl group and/or (iii) X denotes sulfur or oxygen.

a1 4 ~~4~~ <sup>#1</sup>  
 4. p-Aminophenol derivative according to Claim ~~1~~ <sup>#1</sup>, characterized in that it is selected from the group consisting of 4-amino-2-(3-thienyl)phenol; 4-amino-2-(4-methyl-3-thienyl)phenol and 4-amino-2-(2-chloro-3-thienyl)phenol and physiologically tolerated salts thereof.

5 ~~5~~ <sup>#1</sup>  
 5. Preparation for oxidative dyeing of keratin fibers based on a developer-coupler combination, characterized in that said preparation contains as the developer at least one p-aminophenol derivative of formula (I) according to Claim ~~1~~ <sup>#1</sup>.

6 ~~6~~ <sup>#5</sup>  
 6. Preparation according to Claim ~~5~~ <sup>#5</sup>, characterized in that it contains the p-aminophenol derivative of formula (I) in an amount from 0.005 to 20.0 wt. %.

7 ~~7~~ <sup>#5</sup>  
 7. Preparation according to Claim ~~5~~ <sup>#5</sup>, characterized in that the coupler is selected from the group consisting of 2,6-diaminopyridine, 2-amino-4-[(2-hydroxyethyl)amino]anisole, 2,4-diamino-1-fluoro-5-methylbenzene, 2,4-diamino-1-methoxy-5-methylbenzene, 2,4-diamino-1-ethoxy-5-methylbenzene, 2,4-diamino-1-(2-hydroxyethoxy)-5-methylbenzene, 2,4-di[(2-hydroxyethyl)amino]-1,5-dimethoxybenzene, 2,3-diamino-6-methoxypyridine, 3-amino-6-methoxy-2-(methylamino)pyridine, 2,6-diamino-3,5-dimethoxypyridine, 3,5-diamino-2,6-dimethoxypyridine, 1,3-diaminobenzene, 2,4-diamino-1-(2-hydroxyethoxy)benzene, 2,4-diamino-1,5-di-(2-hydroxyethoxy)benzene, 1-(2-aminoethoxy)-2,4-diaminobenzene, 2-amino-1-(2-hydroxyethoxy)-4-methylaminobenzene, 2,4-diaminophenoxyacetic acid, 3-[di-(2-hydroxyethyl)amino]aniline, 4-amino-2-di-[(2-hydroxyethyl)amino]-1-ethoxybenzene, 5-methyl-2-(1-methylethyl)phenol, 3-[(2-hydroxyethyl)amino]aniline, 3-[(2-aminoethyl)amino]aniline, 1,3-di-(2,4-diaminophenoxy)propane, di-(2,4-diaminophenoxy)methane, 1,3-diamino-2,4-dimethoxybenzene, 2,6-bis-(2-hydroxyethyl)aminotoluene, 4-hydroxyindole, 3-dimethylaminophenol, 3-diethylaminophenol, 5-amino-2-methylphenol, 5-amino-4-fluoro-2-methylphenol, 5-amino-4-methoxy-2-methylphenol, 5-amino-4-ethoxy-2-methylphenol, 3-amino-2,4-dichlorophenol, 5-amino-2,4-

dichlorophenol, 3-amino-2-methylphenol, 3-amino-2-chloro-6-methylphenol, 3-aminophenol, 2-[(3-hydroxyphenyl)amino]acetamide, 5-[(2-hydroxyethyl)amino]-2-methylphenol, 3-[(2-hydroxyethyl)amino]phenol, 3-[(2-methoxyethyl)amino]phenol, 5-amino-2-ethylphenol, 2-(4-amino-2-hydroxyphenoxy)ethanol, 5-[(3-hydroxypropyl)amino]-2-methylphenol, 3-[(2,3-dihydroxypropyl)-amino]-2-methylphenol, 3-[(2-hydroxyethyl)amino]-2-methylphenol, 2-amino-3-hydroxypyridine, 5-amino-4-chloro-2-methylphenol, 1-naphthol, 1,5-dihydroxynaphthalene, 1,7-dihydroxynaphthalene, 2,3-dihydroxynaphthalene, 2,7-dihydroxynaphthalene, 2-methyl-1-naphthol acetate, 1,3-dihydroxybenzene, 1-chloro-2,4-dihydroxybenzene, 2-chloro-1,3-dihydroxybenzene, 1,2-dichloro-3,5-dihydroxy-4-methylbenzene, 1,5-dichloro-2,4-dihydroxybenzene, 1,3-dihydroxy-2-methylbenzene, 3,4-methylenedioxyphenol, 3,4-methylenedioxyaniline, 5-[(2-hydroxyethyl)amino]-1,3-benzodioxol, 6-bromo-1-hydroxy-3,4-methylenedioxybenzene, 3,4-diaminobenzoic acid, 3,4-dihydro-6-hydroxy-1,4(2H)-benzoxazine, 6-amino-3,4-dihydro-1,4(2H)benzoxazine, 3-methyl-1-phenyl-5-pyrazolone, 5,6-dihydroxyindole, 5,6-dihydroxyindoline, 5-hydroxyindole, 6-hydroxyindole, 7-hydroxyindole and 2,3-indolinedione.

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8. Preparation according to

Claim 5, characterized in that it contains the developers and couplers in a total amount of 0.005 to 20 wt.%, based on the total amount of colorant.

9. Preparation according to  
least one direct dye.

Claim 5, characterized in that it contains additionally at

10. Preparation according to

Claim 5, characterized in that it is a hair colorant.

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